

Title (en)  
POROUS POLYOLEFIN FILM

Title (de)  
PORÖSE POLYOLEFINFOLIE

Title (fr)  
FILM DE POLYOLÉFINE POREUX

Publication  
**EP 3757156 A4 20211124 (EN)**

Application  
**EP 19756951 A 20190222**

Priority  
• JP 2018030549 A 20180223  
• JP 2018030550 A 20180223  
• JP 2019006736 W 20190222

Abstract (en)  
[origin: EP3757156A1] Provided is a porous polyolefin film having a shutdown temperature of 133°C or lower, a porosity of 41% or more, and a value of 12,500 or more, which is calculated by (tensile elongation (%) in the machine direction (MD) × tensile strength (MPa) in the machine direction (MD) + tensile elongation (%) in the transverse direction (TD) × tensile strength (MPa) in the transverse direction (TD))/2, the TSD (°C) and Tm satisfying the following formula (1):  $T_m - TSD \geq 0$  where TSD represents the shutdown temperature (°C), and Tm represents the lowest among the melting point (°C) of all layers, wherein excellent safety, such as protection from internal short circuit and/or thermal runaway, is achieved in the porous polyolefin film, without reducing the permeability as shown in conventional microporous films.

IPC 8 full level  
**C08J 9/26** (2006.01); **C08J 9/28** (2006.01); **H01G 9/02** (2006.01); **H01G 11/52** (2013.01); **H01M 10/0525** (2010.01); **H01M 10/42** (2006.01); **H01M 50/403** (2021.01); **H01M 50/417** (2021.01); **H01M 50/457** (2021.01); **H01M 50/489** (2021.01); **H01M 50/491** (2021.01); **H01M 50/494** (2021.01)

CPC (source: EP KR US)  
**B29C 48/0018** (2019.01 - KR US); **B29C 48/022** (2019.01 - KR US); **B29C 48/08** (2019.01 - KR US); **C08J 5/18** (2013.01 - KR US); **C08J 9/26** (2013.01 - KR); **C08J 9/286** (2013.01 - EP KR); **H01G 9/02** (2013.01 - EP KR); **H01G 11/52** (2013.01 - EP KR US); **H01M 10/0525** (2013.01 - KR); **H01M 10/4235** (2013.01 - EP KR); **H01M 50/403** (2021.01 - EP KR US); **H01M 50/417** (2021.01 - EP KR US); **H01M 50/457** (2021.01 - EP KR); **H01M 50/489** (2021.01 - EP KR US); **H01M 50/491** (2021.01 - EP KR US); **H01M 50/494** (2021.01 - EP KR); **B29K 2023/065** (2013.01 - KR US); **B29K 2105/04** (2013.01 - KR US); **C08J 2205/044** (2013.01 - EP KR); **C08J 2323/08** (2013.01 - EP KR US); **C08J 2323/20** (2013.01 - KR US); **H01M 10/0525** (2013.01 - EP); **Y02E 60/10** (2013.01 - EP KR); **Y02T 10/70** (2013.01 - EP KR)

Citation (search report)  
• [X] EP 1097961 A1 20010509 - TONEN SEKIYUKAGAKU KK [JP]  
• [X] US 2017005321 A1 20170105 - SUGATA MASAMI [JP], et al  
• [X] US 2010021822 A1 20100128 - IKEMOTO TAKASHI [JP], et al  
• See references of WO 2019163935A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**EP 3757156 A1 20201230**; **EP 3757156 A4 20211124**; CN 111684002 A 20200918; CN 111684002 B 20221028; JP 7207300 B2 20230118; JP WO2019163935 A1 20201217; KR 20200123407 A 20201029; TW 201940528 A 20191016; US 2021115206 A1 20210422; WO 2019163935 A1 20190829

DOCDB simple family (application)  
**EP 19756951 A 20190222**; CN 201980011603 A 20190222; JP 2019006736 W 20190222; JP 2019520754 A 20190222; KR 20207017684 A 20190222; TW 108106077 A 20190222; US 201916970226 A 20190222